Portable Electrochemical Sensors

Company:
Nomadics, Inc.

Location:
Stillwater, OK

Employees:
47

President:
Colin Cumming

Project Officer:
Bruce J. Nielsen,

AFRL Air Expeditionary Forces Technologies Division

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Nomadics' electrochemical cards allow a personal computer to serve as a powerful, laboratory-quality instrument capable of measuring a number of indicators of water quality in the field or in the lab.

Air Force Requirements:

As the custodian of millions of acres of land, the Air Force is committed to ensuring that steps are taken to protect the environment. Of particular interest is the impact of past and present Air Force operations on ground and surface water. The monitoring of water quality over widely dispersed areas requires portable instruments that offer laboratory-level capabilities and sensitivities. Unfortunately, such instruments are expensive and tend to be too delicate for field use. The Air Force's needs for environmental monitoring requirements called for instruments that were portable, reliable for outdoor operations, and cost-effective.

SBIR Technology:

Nomadics, Inc. was awarded a Small Business Innovation Research (SBIR) contract to apply their patented sensor technology, based on the PC Card (formerly PCMCIA) architecture, in the development of instruments to meet the Air Force's environmental monitoring requirements. Nomadics' concept allows development of laboratory quality instruments in a credit card-sized device that plugs into the PCMCIA slot of a portable computer. This approach converts a commercial laptop computer into a powerful platform capable of collecting, storing, and manipulating field data via common software programs. By using multiple Nomadics' PC Cards, the computer platform can serve in a number of instrumentation roles.

For more information on this story, contact Air Force TechConnect at 1-800-203-6451 or at www.afrl.af.mil/ techconn/index.htm

Working with the Air Force Research Laboratory's Air Environmental Forces Technologies Division, Nomadics defined a suite of electrochemical sensors to be developed. The products included sensors for pH, dissolved oxygen, conductivity, ion concentration, oxidation reduction potential, and other indicators of water quality. Sensors were also designed as well as detectors for specific chemical contaminants such as volatile organic compounds (VOCs). The technology worked so well that it was later incorporated into systems funded under additional SBIR Phase II contracts.

Company Impact:

Nomadics has subsequently licensed the technology to other companies that now market the product internationally. In addition to the electrochemical sensors, Nomadics has used the experience in developing PC Card instruments to design other applications, including a field spectrometer and several temperature measurement devices. These products have also been licensed to other companies for sales and distribution. Nomadics' PC Card instruments have contributed significantly to the company's revenues and capabilities and have created opportunities for other product development efforts. Nomadics' exceptional performance was recognized when the company won the Small Business Administration 1999 SBIR Tibbetts Award for "Excellence in Product Development."

Company Quote:

"The Air Force defined a need for environmental monitoring. Its solution not only benefited them but also answered the requirements of a much larger community concerned about the environment. Nomadics is proud to have contributed to meeting this need and is grateful for the opportunity that the Air Force SBIR Program has afforded us."

Colin Cumming
President and CEO
Nomadics, Inc.

SBIR

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